

## CLAIMS

I claim:

1. A pallet construction for an annular cooler forming a gas permeable surface for supporting and transporting material during processing thereof, the pallet construction comprising:

5 a pallet deck having a series of substantially parallel rows of spaced apart elongated slots, each of the slots in a row being staggered with respect to the slots in an adjacent row in the series, wherein the slots define apertures through the pallet deck; and

a support frame supporting the pallet deck and having at least one angular brace oriented at an acute angle with respect to the rows of slots.

2. The pallet construction of claim 1, wherein the elongated slots in each of the rows in the series are longitudinally aligned.

3. The pallet construction of claim 1, wherein the support frame comprises at least one horizontal brace member extending substantially transverse to the rows of slots.

4. The pallet construction of claim 1, wherein the support frame further comprises at least one pair of angular brace members each oriented at an acute angle with respect to the rows of slots, wherein said pair of angular brace members are oriented so as to define a cross-brace member.

5. The pallet construction of claim 1, wherein the support frame further comprises a plurality of horizontal brace members extending substantially transverse to the rows of slots and a plurality of angular brace members each intersecting with at least one of the horizontal brace members.

6. The pallet construction of claim 1, wherein the pallet deck comprises a relatively flat plate member having an arcuate-shaped outer edge, an arcuate-shaped inner-edge concentric with said outer edge, a leading edge and a trailing edge configured so that said deck forms a truncated circular segment.

7. The pallet construction of claim 1, further comprising:  
at least one shaft extending from the support frame, the shaft for coupling the  
pallet construction to a conveyor frame.

8. The pallet construction of claim 7, wherein the support frame further  
comprises a series of aligned bearings for supporting at least one shaft.

9. The pallet construction of claim 1, further comprising:  
two shafts extending in opposite directions from the support frame, the shafts for  
coupling the pallet construction to a conveyor frame.

10. The pallet construction of claim 9, wherein the two shafts are offset from  
a longitudinal centerline of the pallet construction.

11. The pallet construction of claim 1, further comprising:  
means for movably supporting the support frame in a conveyor system.

12. The pallet construction of claim 1, wherein the support frame is attached  
to the pallet deck by bevel welding.

13. A pallet construction for an annular cooler forming a gas permeable  
surface for supporting and transporting material during processing thereof, the pallet  
construction comprising:

5 a pallet deck having a series of substantially parallel rows of spaced apart  
longitudinally aligned elongated slots, each of the slots in a row being staggered with  
respect to the slots in an adjacent row in the series, wherein the slots define apertures  
through the pallet deck;

10 a support frame supporting the pallet deck and having a plurality of horizontal  
brace members extending substantially transverse to the rows of slots and a plurality of  
angular brace members each intersecting at an acute angle with at least one of the  
horizontal brace members; and

opposing shafts coupled to and extending in opposite directions from the support  
frame, wherein the two shafts are offset from a centerline of the pallet construction.

14. The pallet construction of claim 13 wherein the pallet deck comprises a  
relatively flat plate member having an arcuate-shaped outer edge, an arcuate-shaped  
inner-edge concentric with said outer edge, a leading edge and a trailing edge  
configured so that said deck forms a truncated circular segment.

15. The pallet construction of claim 13 wherein the angular members are orientated so as to define at least one cross-brace member.

16. The pallet constructions of claim 13 wherein the area defined by the elongated slots comprises from about 25% to about 40% of the surface area of the pallet deck.

17. An annular cooler having a conveyor system forming a gas permeable surface for supporting and transporting material during cooling thereof, the conveyor system comprising:

inner and outer rail members, and

5 a plurality of aligned pallet constructions supported by the inner and outer rail members and movable along a circular path defined by the inner and outer rail members,

10 wherein each of the plurality of aligned pallet constructions comprises a pallet deck having a series of substantially parallel rows of spaced apart elongated slots, each of the slots in a row being staggered with respect to the slots in an adjacent row in the series, wherein the slots define apertures through the pallet deck, and a support frame supporting the pallet deck and having at least one angular brace oriented at an acute angle with respect to the rows of slots.

18. The annular cooler of claim 17, wherein the elongated slots in each of the rows in the series are longitudinally aligned.

19. The annular cooler of claim 17, wherein the support frame comprises at least one horizontal brace member extending substantially transverse to the rows of slots.

20. The annular cooler of claim 17, wherein the support frame further comprises at least one pair of angular brace members each oriented at an acute angle with respect to the rows of slots, wherein said pair of angular brace members are oriented so as to define a cross-brace member.

21. The annular cooler of claim 17, wherein the support frame further comprises a plurality of horizontal brace members extending substantially transverse to the rows of slots and a plurality of angular brace members each intersecting with at least one of the horizontal brace members.

22. The annular cooler of claim 17, wherein the first and second rail members comprise inner and outer concentric annular rail members which support the support frame.

23. The annular cooler of claim 17, further comprising opposing shafts coupled to the support frame, the opposing shafts coupling the support frame to the inner and outer rail members, respectively.